

RADICACIÓN

Problema 55:

Simplifica:

$$\left[\frac{1-b^{-2}}{b^2-1} \cdot \frac{1}{b^4}\right]^{1/2} \cdot \left[\frac{1-2b^{-1}+b^{-2}}{(b-1)^2}\right]^{-1/2}$$

Solución Problema 55:

$$\left[\frac{1-b^{-2}}{b^2-1} \cdot \frac{1}{b^4}\right]^{1/2} \cdot \left[\frac{1-2b^{-1}+b^{-2}}{(b-1)^2}\right]^{-1/2} =$$

$$\left[\frac{1-\frac{1}{b^2}}{b^2-1} \cdot \frac{1}{b^4}\right]^{1/2} \cdot \left[\frac{1-\frac{2}{b}+\frac{1}{b^2}}{(b-1)^2}\right]^{-1/2} = \left[\frac{\cancel{b^2}-1}{b^2} \cdot \frac{1}{b^4}\right]^{1/2} \cdot \left[\frac{b-2+\frac{1}{b^2}}{(b-1)^2}\right]^{-1/2} =$$

$$= \left[\frac{1}{b^2} \cdot \frac{1}{b^4}\right]^{1/2} \cdot \left[\frac{b(b-2)+1}{b^2(b-1)^2}\right]^{-1/2} = \left[\frac{1}{b^6}\right]^{1/2} \cdot \left[\frac{b^2-2b+1}{b^2(b-1)^2}\right]^{-1/2} =$$

$$= \sqrt{\frac{1}{b^6} \cdot \frac{\cancel{(b-1)^2}}{b^2 \cancel{(b-1)^2}}}^{-1/2} = \frac{1}{b^3} \left[\frac{1}{b^2}\right]^{-1/2} = \frac{1}{b^3} \cdot \frac{1}{\left(\frac{1}{b^2}\right)^{1/2}} = \frac{1}{b^3} \cdot \frac{1}{\sqrt{\frac{1}{b^2}}} =$$

$$= \frac{1}{b^3} \cdot \frac{1}{\frac{1}{b}} = \frac{1}{b^3} \cdot b = \frac{b}{b^3} = \frac{1}{b^2}$$

Luego:

$$\left[\frac{1-b^{-2}}{b^2-1} \cdot \frac{1}{b^4}\right]^{1/2} \cdot \left[\frac{1-2b^{-1}+b^{-2}}{(b-1)^2}\right]^{-1/2} = \frac{1}{b^2}$$